

Solar-powered Clean Water Delivery in the Dominican Republic & Honduras.



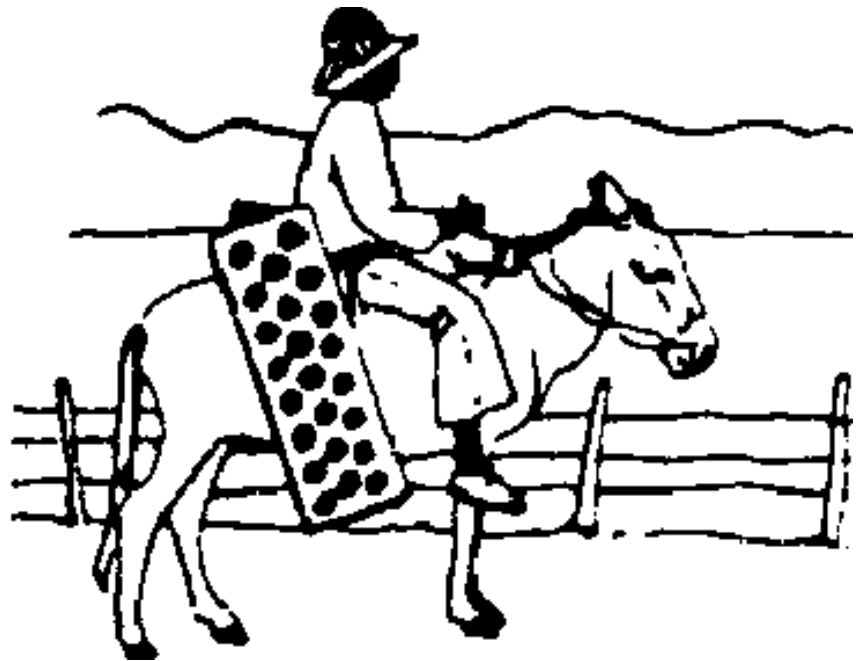
Enersol Associates, Inc.

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Enersol

- International NGO
- Rural development through alternative energy
- Dominican Republic (16 years)
- Honduras (9 years)
- Mexico (5 years)



Enersol's Results in Solar Rural Electrification . . .

- Network of local enterprises of solar technicians servicing rural areas with efficient service.
- PV systems financed for rural home and business electrification broadening base of access.
- Good client service leading to trust in the technology and long-term sustainability of PV systems.



Why the move to water?

- Water is a high priority need in rural areas.
Rural population without potable water: DR 54%, Honduras 34%
- Through PV electrification Enersol had developed the necessary infrastructure and experience to support water pumping activities: technicians, trust and commercial supply were all in place.
- Household electrification proceeding commercially in Dominican Republic and Honduras.



Water : Our goal

Develop a model which better incorporates concepts of cost-recovery and sustainability than we have witnessed in conventional rural water supply, through:

- small scale projects
- decentralized service
- involvement of private local business
- NGO funding BUT with improved cost-recovery as opposed to give-away of service.



Community Selection

- No access to grid electricity
- Conventional options unavailable (e.g. gravity flow)
- Access to water difficult (far away, poor quality)
- Groundwater, not surface
- Near solar technician-entrepreneur
- Potable water for domestic uses only
- 2 rural regions in Dominican Republic; 1 in Honduras



System Details

- Communities 50-300 people
- 40 liter per person per day consumption
- 3-6 public taps in DR; private/public system in Honduras
- 10 year expected life, minimum
- 10 community systems thus far (9 DR, 1 Honduras)



Agreement with Communities

- Monthly payment a flat-fee for all systems.
- Community commitment to water conservation coupled with conservative per capita water design.
- Enersol maintains the right to remove the PV equipment if: a) grid arrives or b) community defaults on payments for fund.



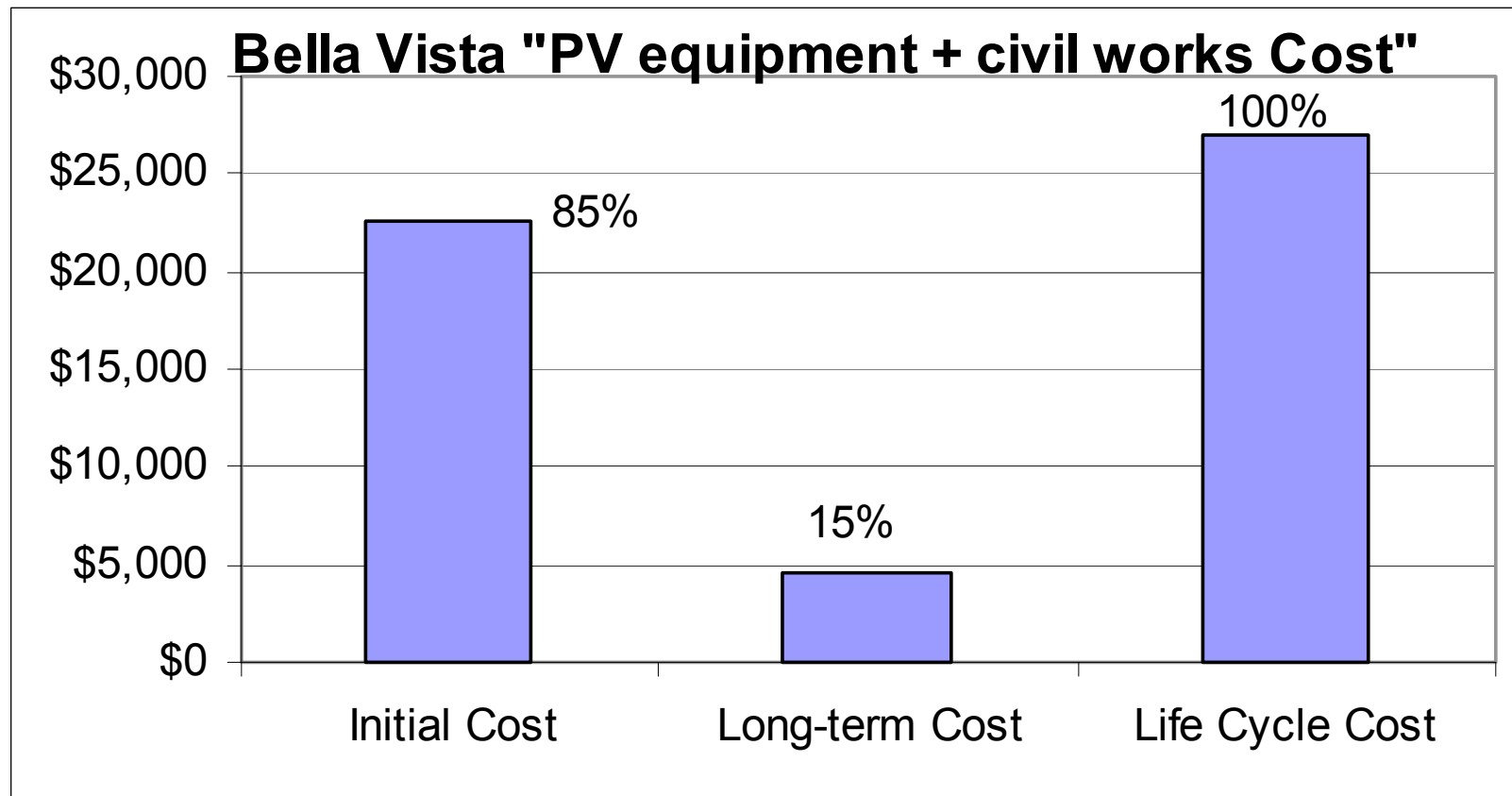
What was initial “cost”?

Bella Vista (“typical” system)

- PV Equipment cost = \$15,000
- Above + civil works cost = \$22,000
- Above + implementation cost = \$40,000



What was long term cost?



10 year life cycle cost analysis

December 7, 2000

Enersol Associates, Inc.



Obstacles / Challenges

- Community payment collection mechanisms are a challenge for both project workers and community leaders involved.
- Lack of groundwater (dry wells) is a major factor in disqualification of communities.
- Largely based on the high number of projects disqualified for lack of water and the challenges in developing community tariff collection mechanisms, there is a high cost associated with the community development.



What we learned

- The PV technology is not the problem.
- Key to success is finding way to guarantee the revenue stream to cover the “15%” of the life cycle cost that occurs after initial installation. Who will pay to fix “minor” problems? Who buys the new pump 5-10 years after the “project” ends?
- In many circumstances in rural areas people are already paying a lot for water, and there is a willingness to pay for water service far above conventional notions & existing tariffs.



Where we are going

Developing new mechanisms for community tariffs collections, water allocation and system management that are:

- more efficient
- consumption based (e.g. metered)
- impartial and impersonal
- able to incorporate local businesses

